

AMENDMENTS TO THE CLAIMS
(including complete listing of the claims)

1. (Currently Amended) A hydrogel patch for use in electroosmotic extraction of glucose across skin and electrochemical detection of a signal proportional to an amount or concentration of glucose, comprising:

(a) a hydrophilic compound which forms a gel forming polymer material comprising polymer chains, said polymer material consisting essentially of polyethylene oxide in the presence of water, wherein said polyethylene oxide is present in an amount of about 4% or more 0.5% to about 40% by weight based on the total weight of the hydrogel;

(b) water in an amount of about 95% or less and more than about 55% based on the total weight of the hydrogel;

(c) an enzyme capable of catalyzing a reaction composition comprising glucose oxidase, said glucose oxidase present in an amount of from about 10 units to about 5,000 units per gram of the total weight of the hydrogel, wherein the glucose oxidase can catalyze a reaction between glucose and oxygen resulting in the generation of hydrogen peroxide; and

(d) an electrolyte a chloride salt from about 0.3% to about 2% by weight based on the total weight of the hydrogel;

(e) a phosphate buffer in an amount sufficient to maintain a pH in the hydrogel in the range of about pH 6 to about pH 8; and

(f) a structural support embedded in the hydrogel;

wherein (i) the hydrogel components are treated to remove electroactive compounds, (ii) there is cross-linking between the polymer chains comprising the hydrogel, and (iii) hydrogen peroxide degradative components of hydrogel are reduced such that quantitation of hydrogen peroxide produced by the glucose oxidase reaction is not compromised.

2-3 (Canceled)

4. (Currently Amended) The hydrogel patch of claim 1, wherein a product the hydrogen peroxide of the reaction in step (e) is not degraded more than 20% in 30 minutes.

5- 8. (Canceled)

9. (Currently Amended) The hydrogel ~~patch~~ of claim 1, further comprising: ~~(f)~~ a mutarotase enzyme.

10-13 (Canceled)

14. (Currently Amended) The hydrogel ~~patch~~ of claim 1, characterized by a flat configuration having thickness in a range of about 5 μm to about 60 mils.

15. (Currently Amended) The hydrogel ~~patch~~ of claim 14, characterized by a first and a second surface area wherein each surface area is in a range of about 0.5 cm^2 to about 10 cm^2 and wherein the ~~patch~~ hydrogel has a thickness of from about 5 μm to 10 mils.

16. (Currently Amended) The hydrogel ~~patch as claimed in~~ of claim 1, ~~further comprising a structural support material embedded in the hydrogel,~~ wherein the structural support material is a non-woven fabric having an outer parameter configuration and size substantially equal to that of the hydrogel patch.

17-27 (Canceled)

28. (New) The hydrogel of claim 1, wherein the glucose oxidase is a recombinant glucose oxidase.

29. (New) The hydrogel of claim 1, wherein the glucose oxidase is present in an amount of about 200 units or more per gram weight of the hydrogel.

30. (New) The hydrogel of claim 1, further comprising a biocide.

31. (New) The hydrogel of claim 1, further comprising a humectant.

32. (New) The hydrogel of claim 1, wherein said hydrogel has a surface area in the range of about 0.5 cm² to about 10 cm².

33. (New) The hydrogel of claim 32, wherein the hydrogel has a thickness in the range of about 1 mils to about 50 mils.

34. (New) The hydrogel of claim 1, wherein said cross-linking is carried out by providing ionizing radiation.

35. (New) The hydrogel of claim 34, wherein said radiation is electron beam radiation.

36. (New) The hydrogel of claim 1, further comprising a cross-linking agent.

37. (New) The hydrogel of claim 36, wherein said cross-linking agent is selected from the group consisting of ethylene glycol methacrylate, triethylene glycol methacrylate, trimethylolpropane trimethacrylate, and N,N'-methylenebisacrylamide.

38. (New) The hydrogel of claim 1, wherein the hydrogel (i) comprises an amount of greater than 4% and preferably less than 35% by weight of cross-linked polyethylene oxide having a weight average molecular weight of from about 0.02-6 x 10⁶ daltons, and (ii) polymer material is subjected to high energy radiation from about 0.2 to about 5.0 Mrads.